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Scientific novelty A. V. Adedayo^{1,2}

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ABSTRACT

In this study, an organized method for determining the novelty of submitted manuscript is presented. The importance of the need for objective determination of the novelty of submitted manuscript is identified. Discussions on the meaning of novelty are presented and used as basis to form mathematical expressions defining parameters useful to quantify the novelty of submitted manuscript. The defined parameters will be found more useful in objective decision of the novelty of submitted manuscripts as opposed to the current frustrating subjective methodology adopted by editors and reviewers world over.

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Introduction

One of the important considerations when deciding acceptability of submitted manuscript in scientific communication is novelty of the submitted manuscripts. The importance of this issue becomes obvious right from the editorial review stage of submitted manuscript when editors decide on the suitability of submitted manuscript for publication. While some journal publishers believe that no manuscript should be rejected only on the basis of lack of novelty (Sciencedomain, 2015), however, oftentimes, in many other journal publications, a reject decision of a submitted manuscript has been based on lack of novelty, while editors do not provide reference to confirm lack of novelty. Most of the time, the decision of a journal to publish a manuscript has been dominated by the opinion of the Editor/reviewer as regards what they perceive as the novelty value of the manuscripts. This judgment is subjective and most of the time leads to decisions which are frustrating (Sciencedomain, 2015). As a result, there has been significant clamor of biases in peer review process in academic publishing. The considerable opinion by many authors is that the method is crude, and provides an escape route for editors to justify a deliberate hateful reject decision. Some expository studies aimed at enhancing better understanding of the subject of novelty are available and include: Gorny (2007); Aireti (1976).

The clamor for objective, transparent and reliable procedures for evaluation of scientific articles has ever been on the increase, particularly to determine the impact of a publication (Adedayo, 2013; Adedayo, 2014a, b, c; Adedayo, 2015a, b). The notable feature of scientific methods is organized methods/systems of proving, examining and testing claims.

In this study, attempt is made to develop an organized procedure to compute the novelty of a manuscript. The line of thought used in this development, follows from the meaning of novelty as reported in the literature.

Methodology

The framework to quantify the novelty of a submitted manuscript was developed through a systematic approach. An exposition on the meaning of novelty was made. This was used

Tele: E-mail addresses: a.v.adedayo@outlook.com © 2015 Elixir All rights reserved as basis to define parameters to quantify novelty. A categorization made by Adedayo, (2013; 2014a, b, c; 2015a, b) was used to classify publications cited in a new manuscript. These were used to define new parameters needed to quantify the novelty of submitted manuscript.

What is Novelty?

Novelty has been explained as a quality of being new/fresh and interesting. It is a characteristic which depicts a new or unusual experience or occurrence which is interesting (Gorny, 2007). It is considered that newness is not sufficient to categorize a thing as novelty; the quality of being interesting is seen as an essential element. The perception of newness is context dependent, because novelty is recognized in contrast with what is considered old. Novelty depends on the difference between the perceived object and its antecedents (Gorny, 2007). Novelty is thus a function of change. The old can become the new again if it is preceded by something different; hence the phenomenon of recurrence. As a result, two levels of novelty are recognizable which are: relative and absolute novelty. These are often referred to as subjective and objective novelty respectively (Aireti, 1976). Subjective novelty is the apperception of something as being new and interesting by an individual person or a group of persons; while objective novelty describes a situation where something is being seen as new for all humanity in its development through ages. It connotes the first time the thing is existing in history.

From the definition of novelty, two features standout. These features are namely: NEW and INTERESTING. New means; that which has been produced, introduced, or discovered recently or now for the first time; not existing before! It could also mean something already existing but seen, experienced, or acquired recently or now for the first time. Interesting on the other hand means: arousing curiosity or interest; holding or catching the attention. It connotes a strong desire to know or learn something. Something can be new and not interesting. Also, something may not be new but interesting. However, novelty implies newness and interesting.

Science of Novelty

Relative to the authors cited in a new manuscript, a manuscript can be considered new because it is fresh and more current than all other cited references. Also, the level to which an article is interesting can be quantified based on the citations within the manuscript. In the objective sense, every article cited in a new manuscript can be adjudged to be interesting. The reasons are quite obvious. Firstly, the author(s) who wrote the cited references found the ideas discussed therein interesting, this is the reason the author(s) wrote on them. Also, the editor and reviewers who accepted to publish these references also found them interesting. Further still, the author of a new manuscript who cites the references in his/her manuscript also found them interesting!

Therefore, based on simple logical reasoning, all cited references are interesting. If the subject of the new manuscript expresses similar opinions as the cited references, then it should be equally interesting. However, Adedayo, (2013; 2014a, b, c; 2015a, b) identified that oftentimes, not all cited references express the same opinion with the manuscript where they are cited. An example of this is seen in literature review sections when indications of opposing standpoints are made. Adedayo, (2013; 2014a, b, c; 2015a, b) classified the relationship of cited references to the new manuscript where they are cited as Imagined and Real. The Introduction and the Literature Review sections are classified as sections containing citations that have imagined relationship with the new manuscript, while sections including the Methodology, Results and Discussion of Results are classified as sections containing citations that have real relationship with the new manuscript.

By definition, novelty connotes a characteristic of newness and interesting. If N_I is the number of authors cited in the imaginary sections of the manuscript, and N_R is the number of authors cited in the real sections of the manuscript, then an expression of the quantification of level to which the manuscript is interesting can be expressed as:

$$M_I = \frac{N_R}{N_I} \tag{1}$$

 M_I indicates the quantity of the level to which an article is interesting.

Similarly, a quantification of the newness of a manuscript can be made. Newness can be expressed in terms of the degree to which the new manuscript is different from existing similar publications. i.e.

$$M_N = 1 - \frac{N_R}{N_I} \tag{2}$$

The Novelty of a manuscript can be estimated as a function of these parameters.

Conclusion

Two parameters useful in quantification of novelty have been defined. Firstly, a parameter to determine the level to which an article is interesting has been defined. Also, a parameter to determine the degree to which a manuscript is different from other similar manuscript has been defined. These parameters will be found very useful for objective decision of novelty of submitted manuscript.

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